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10/092,289	03/05/2002	James A. Mott	SUN-P5524	7781

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EXAMINER	
SHEW, JOHN	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/092,289	MOTT, JAMES A.
	Examiner	Art Unit
	John L. Shew	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-22,26-37,40-49,52-54,57-61,63 and 65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *13-22 and 26-31* is/are allowed.

6)☐ Claim(s) *1-6,8-12,32-37,40-49,52-54,57-61,63 and 65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 52, 54, 57, 58, 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon et al. (Patent No. 5367517) in view of Kumar et al. (Patent No. US 6597662 B1).

Claim 1, Cidon teaches a method of dynamically controlling the rate of communication between two entities (bandwidth reservation between a source node and a destination node ref. by Abstract lines 1-8), the method comprising receiving an electronic communication (transmission of a request packet from a source node to a destination node ref. by col. 2 lines 8-13), for a first channel between a first entity and a second entity (Fig. 1, Automatic Network Routing link 5 between Node 0 and Node 3 ref. by col. 2 lines 50-67, col. 3 lines 1-22), at a relay element situated between the first entity and the second entity (Fig. 1, intermediate Node 1 located between Node 0 and Node 3 ref. by col. 3 lines 23-37), retrieving from said communication a modifiable first value

associated with a first target bandwidth for said first channel (Bandwidth Allocation Device receiving the bandwidth B_max value which is modified from a value of B_Θ to B_Θ/2 of Fig. 2B, Fig. 3A, Fig. 3D), retrieving from said communication a fixed second value associated with a desired bandwidth for said first channel (bandwidth B_min value which remains at a fixed value of B_ Θ/3 of Fig. 3A), determining whether said relay element can provide said first target bandwidth for said first channel (determination if the ANR link 5 can support a bandwidth greater than B_min but less than B_max ref. by col. 3 lines 38-48), and modifying said first value in said communication to a value associated with a decreased first target bandwidth if said relay element cannot provide said first target bandwidth for said channel (BAD for outgoing ANR link 5 replacing the B_max in the reservation request packet with B_maxn1 wherein B_maxn1 is the maximum bandwidth of Node 1 which is less than B_max ref. by col. 3 lines 38-48). Cidon does not teach wherein the desired bandwidth is never less than said first target bandwidth.

Kumar teaches the desired bandwidth is never less than said first target bandwidth (desired maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-31, wherein target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback

information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Claim 2, Cidon teaches further comprising forwarding said communication (Fig. 1, Fig. 2B, Node 1 sending a outgoing ANR link 12 with a non-zero bandwidth request to Node 2 ref. by col. 4 lines 13-16), wherein said first value in said forwarded communication indicates a bandwidth allocated to said first channel by said relay element (Fig. 3B, reservation request packet with the bandwidth modification of B(0)=B_0 sent over the ANR link 12 by Node 1 ref. by col. 6 lines 51-67, col. 7 lines 1-5).

Claim 3, Cidon teaches further comprising prior to said determining receiving a set of communications on a set of channels through said switching element not including said first channel (Fig. 4, Fig. 6, Node 24 equivalent to Node 1 receiving multiple bandwidth request packets for route links 34 38 62 and links 42 38 72 70 68 66 each representing different set of channels ref. by col. 9 lines 51-67, col. 10 lines 19-24), retrieving from said set of communications a set of values associated with target bandwidths for said set of channels (bandwidth request packet for each respective route inclusive of the bandwidth B_max value of Fig. 3B), and summing said target bandwidths to calculate a total allocated bandwidth for said relay element (Fig. 7, Compare Request With Available Resources Step 724 to calculate the available bandwidth ref. by col. 10 lines 25-42).

Claim 4, Cidon teaches wherein said determining comprises comparing said total allocated bandwidth to a maximum bandwidth of said relay element (Fig. 7, Receive Request Packet At A Node Step 720 which includes the bandwidth B_max value and

Compare Request With Available Resources Step 724 which is the total available bandwidth of the node ref. by col. 10 lines 25-42), and if said maximum bandwidth exceeds said total allocated bandwidth by a difference of more than said first target bandwidth (Fig. 7, result of Step 724 Available Resources >= Request ref. by col. 10 lines 25-42), determining that said relay element can provide said first target bandwidth for said first channel (Fig. 7, Decrease Available Resource By Request Step 726 wherein the node provides the target bandwidth by reducing its total available bandwidth resources ref. by col. 10 lines 25-42).

Claim 5, Cidon teaches wherein said determining comprises comparing said first target bandwidth for said first channel to a previous bandwidth granted to said first channel by said relay element (comparison of target bandwidth B_maxn1 being greater than previous bandwidth B_min which is the minimum bandwidth which must be granted to allow for data transmission ref. by col. 3 lines 38-48), and if said first target bandwidth is greater than said previous bandwidth comparing a difference between said first target bandwidth and said previous bandwidth with an unallocated bandwidth of said relay element (Fig. 7, Compare Request With Available Resources Step 724 followed by Decrease Available Resource By Request Step 726 wherein the node provides the target bandwidth by reducing its unallocated available bandwidth resources ref. by col. 10 lines 25-42).

Claim 6, Cidon teaches wherein said modifying comprises changing said first value to a value associated with zero bandwidth (bandwidth of at least B_min cannot be supported

then the Bandwidth Allocation Device replaces the B_max value with 0 ref. by col. 3 lines 49-62).

Claim 9, Cidon teaches wherein said electronic communication is a packet (transmission of a request packet from a source node to a destination node ref. by col. 2 lines 8-13).

Claim 10, Cidon teaches wherein said relay element is a switch (Fig. 1, switching node between the source and the destination nodes ref. by col. 1 lines 35-42), and wherein said first entity and said second entity are computer systems (Fig. 1, use of computer communications for routing methods thus the nodes are computer based ref. by col. 9 lines 41-50).

Claim 11, Cidon teaches wherein one of said first entity and said second entity is a computer system (Fig. 1, use of computer communications for routing methods thus the nodes are computer based ref. by col. 9 lines 41-50), and wherein the other of said first entity and said second entity is an input/output subsystem (Fig. 2B, nodes each receiving input data and a Bandwidth Allocation Device for output data ref. by col. 3 lines 13-22).

Claim 12, Cidon teaches a method of dynamically controlling the rate of communication between two entities (bandwidth reservation between a source node and a destination node ref. by Abstract lines 1-8), the method comprising receiving an electronic communication (transmission of a request packet from a source node to a destination node ref. by col. 2 lines 8-13), for a first channel between a first entity and a second entity (Fig. 1, Automatic Network Routing link 5 between Node 0 and Node 3 ref. by col.

2 lines 50-67, col. 3 lines 1-22), at a relay element situated between the first entity and the second entity (Fig. 1, intermediate Node 1 located between Node 0 and Node 3 ref. by col. 3 lines 23-37), retrieving from said communication a modifiable first value associated with a first target bandwidth for said first channel (Bandwidth Allocation Device receiving the bandwidth B_max value which changes from B_Θ to B_Θ/2 of Fig. 2B, Fig. 3A, Fig. 3D), retrieving from said communication a fixed second value associated with a desired bandwidth for said first channel (bandwidth B_min value which remains at a fixed value of B_ Θ/3 of Fig. 3A), determining whether said relay element can provide said first target bandwidth for said first channel (determination if the ANR link 5 can support a bandwidth greater than B_min but less thatn B_max ref. by col. 3 lines 38-48), and modifying said first value in said communication to a value associated with a decreased first target bandwidth if said relay element cannot provide said first target bandwidth for said channel (BAD for outgoing ANR link 5 replacing the B_max in the reservation request packet with decreased B_maxn1 wherein B_maxn1 is the maximum bandwidth of Node 1 ref. by col. 33 lines 38-48). Cidon does not teach a computer readable storage medium storing instructions nor the desired bandwidth is never less than said first target bandwidth.

Kumar teaches a computer readable storage medium storing instructions that when executed by a computer cause the computer to perform a method (Store 1120 and Processor 1110 of Fig. 11, storage device store the programs for carrying out the functions ref. by col. 11 lines 11-21), the desired bandwidth is never less than said first target bandwidth (desired maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-

31, wherein target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Claim 52, Cidon teaches a data structure configured to indicate a rate of communication over a communication channel (Fig. 3A, bandwidth request packet including seven element bandwidth B_max and first element link ANR 5 ref. by col. 6 lines 32-50), the data structure comprising a header portion (Fig. 3A, bandwidth request packet ref. by col. 6 lines 32-50), comprising an identifier of an originator of said data structure (Fig. 3B, fifth element of the Source address BB ref. by col. 6 lines 32-60), an identifier of a destination of said data structure (Fig. 3B, third element of the Destination address AA ref. by col. 6 lines 32-60), and a first value corresponding to a target bandwidth between said originator and said destination (Fig. 3B, eighth element bandwidth B_max=B_0 ref. by col. 6 lines 32-60), and a second value corresponding to a requested bandwidth between said originator and said destination wherein said second value is fixed (bandwidth B_min value which remains at a fixed value of B_ Θ/3 of Fig. 3B), and wherein said first value is modifiable during transmission of said data structure from said originator to said destination (replacement of B_max by B_maxn1 which is the bandwidth supported by Node 1 for ANR 5 ref. by col. 3 lines 38-48). Cidon

does not teach a computer readable storage medium nor the target bandwidth represented by said first value can never be greater than requested bandwidth.

Kumar teaches a computer readable storage medium containing a data structure (Store 1120 and Processor 1110 of Fig. 11, storage device store the programs and structures for carrying out the functions ref. by col. 11 lines 11-21), the target bandwidth represented by first value can never greater than request bandwidth (requested maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-31, wherein first value target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Claim 54, Cidon teaches a data structure further comprising a data portion comprising a set of data (Fig. 3D, second element data $$ ref. by col. 7 lines 22-29).

Claim 57, Cidon teaches an apparatus for dynamically adjusting the rate of communications between a first entity and a second entity on a channel (bandwidth reservation processing by an intermediate node between a source node and a destination node over ANR link 5 ref. by Abstract lines 1-8, Fig. 1), comprising a communication port configured to forward a communication received from a first entity toward a second entity on a communication channel (Node 1 link ANR 5 which is a port

using Bandwidth Allocation Devices to transmit/receive the bandwidth request/reply packets between source node Node 0 and destination node Node 3 ref. by col. 2 lines 50-60, Fig. 2B, col. 3 lines 13-22), a first memory configured to store said communication (Fig. 3A, bandwidth request packet received from Node 0 to Node 1 such that the fields and parameter must be stored by Node 1 for processing ref. by col. 6 lines 32-50), a second memory configured to store a target bandwidth for said channel wherein said target bandwidth is indicated by a modifiable first value in said communication (Fig. 3B, Fig. 3D, bandwidth request packet with the eighth element of the bandwidth B_max which is the target bandwidth provided by Node 1 and is subject to change based on node capacity allocation ref. by col. 6 lines 51-66, col. 7 lines 22-39), a third memory configured to store a requested bandwidth for said channel (tenth element B(Θ) which stores the bandwidth allocation of prior nodes of Fig. 3B), a comparator configured to compare one of said target bandwidth and said requested bandwidth to an available bandwidth for said port (Fig. 7, Compare Request With Available Resources Step 724 which compares the available bandwidth with the requested bandwidth ref. by col. 10 lines 25-42), and a processor configured to adjust said first value to indicate a different target bandwidth (Fig. 7, Decrease Available Resources By Request Step 726 which adjust B_max to the available bandwidth ref. by col. 10 lines 25-42), if the available bandwidth is insufficient to allow a bandwidth equal to said target bandwidth to be allocated to said channel (Fig. 7, Compare Request With Available Resources Step 724 with a result Available Resources >= Request ref. by col. 10 lines 25-42), wherein said target bandwidth indicated by said first value received in

said communication is the bandwidth allocated to said channel upstream of said port (Fig. 7, allocation of the bandwidth and the corresponding Decrease Available Resources By Request Step 726 ref. by col. 10 lines 25-42). Cidon does not teach wherein said requested bandwidth is indicated by a fixed second value in said communication is never less than said target bandwidth.

Kumar teaches the requested bandwidth is indicated by a fixed second value in the communications is never less than a first target bandwidth (requested maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-31, wherein target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Claim 58, Cidon teaches further comprising an extractor configured to extract said first value and said second value from said communications (Fig. 2B, Fig. 3A, Bandwidth Allocation Device which processes the bandwidth request packet to obtain the B_max and B_min values ref. by col. 3 lines 13-20, col. 6 lines 32-50).

Claim 63, Cidon teaches wherein said processor is configured to adjust said first value to indicate a lower target bandwidth if said apparatus is unable to provide said target bandwidth (replacement of the B_max value by the B_maxn1 value if the B_max value cannot be supported ref. by col. 3 lines 38-48).

Claims 8, 53, 59, 60, 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon and Kumar as applied to claims 1, 32, 52, 57 above, and further in view of Gubbi (Patent No. US 6934752).

Claim 8, Cidon teaches a method of bandwidth reservation using bandwidth B_max values between link entities. Cidon and Kumar do not teach the first value is a time value representing a time between communication transmissions from the first entity to the second entity on said first channel.

Gubbi teaches a first value is a time value representing a time between communication transmissions from the first entity to the second entity on said first channel (Fig. 32, Dynamic Bandwidth Request including a Latency Request 322 expressed in Time Unit microseconds ref. by col. 37 lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Dynamic Bandwidth Request message of Gubbi to the min-max bandwidth reservation method of Cidon and Kumar for the purpose of dynamically negotiating for the priority bandwidth and the retransmission parameters for each stream separately to optimize network capacity as suggested by Gubbi (col. 6 lines 7-11).

Claim 53, Cidon and Kumar teach a computer readable storage medium containing a data structure. Cidon teaches wherein said first value of said header portion of said data structure comprises a target rate of communication (Fig. 3B, eighth element bandwidth B_max=B_0 ref. by col. 6 lines 32-60). Cidon and Kumar do not teach a time period and

said target rate of communication is substantially equal to the inverse of said time period.

Gubbi teaches the rate of communication indicated by the time period is substantially equal to the inverse of the time period (Fig. 32, Dynamic Bandwidth Request including Total Bandwidth Request 321 in bytes per second corresponding to the Latency Request ref. by col. 37 lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Dynamic Bandwidth Request message of Gubbi to the min-max bandwidth reservation method of Cidon and Kumar for the purpose of dynamically negotiating for the priority bandwidth and the retransmission parameters for each stream separately to optimize network capacity as suggested by Gubbi (col. 6 lines 7-11).

Claim 59, Cidon teaches wherein each of said first value and second value comprises a bandwidth (bandwidths B_max and B_min ref. by col. 2 lines 50-57). Cidon does not teach a time period representing a delay between communication transmissions from said first entity toward said second entity on said channel.

Gubbi teaches a time period representing a delay between communication transmission from a first entity toward a second entity on a channel (Fig. 32, Dynamic Bandwidth Request including the Latency Request 322 in Time Units of seconds which represents a time delay between communications ref. by col. 37 lines 14-25), the apparatus further comprising an inverter configured to invert said time period (Fig. 32, Bandwidth Request

321 in bytes/sec which is an inversion of the Latency Request in seconds which is obtained through an inversion calculation ref. by col. 37 lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Dynamic Bandwidth Request message of Gubbi to the min-max bandwidth reservation method of Cidon and Kumar for the purpose of dynamically negotiating for the priority bandwidth and the retransmission parameters for each stream separately to optimize network capacity as suggested by Gubbi (col. 6 lines 7-11).

Claim 60, Cidon teaches further comprising an adder configured to add said target bandwidth indicated by said first value of said communication to a target bandwidth indicated by a value within a previous communication on a different channel to calculate a total bandwidth allocated by said port (Fig. 7, Compare Request With Available Resources Step 726 wherein the Node must add the prior assignment of bandwidth of different channels to determine the current available resources with the addition of the requested bandwidth B_max to determine if total resources are exceeded ref. by col 10 lines 25-42).

Claim 61, Cidon teaches wherein said available bandwidth is substantially equal to a maximum bandwidth of said port minus said total allocated bandwidth (Fig. 7, Compare Request With Available Resources Step 726 wherein the available resources represent the total current available bandwidth with the determination if Available Resource >= Request then the Decrease Available Resource By Request Step 726 is performed ref. by col. 3 lines 38-48, col 10 lines 25-42).

Claims 65, 32, 35, 36, 37, 41, 47, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon and Kumar as applied to claim 1 above, and further in view of Hasegawa et al. (Patent No. 6046983).

Claim 65, Cidon teaches wherein said modifying comprises replacing said modifiable first value with a modified first value associated with a lower target bandwidth (Fig. 3C, Fig. 3D, replacement of B_max from the initial bandwidth value of B_Θ to the modified lower bandwidth value of B_Θ/2 ref. by col. 7 lines 6-39), the method further comprising at said relay element allocating the lower target bandwidth to said first channel (Fig. 1, node 2 is able only to support bandwidth B_Θ/2 thus allocating the lower bandwidth to the B_max value ref. by col. 7 lines 6-39), and at another relay element downstream of said relay element (downstream node 3 of Fig. 1), receiving said electronic communication containing said modified first value and said fixed second value (Fig. 3D, packet transmission over ANR link 16 from node 2 to node 3 containing modified B_max and fixed B_min ref. by col. 7 lines 22-39). Cidon and Kumar do not teach allocating to said first channel a bandwidth higher than the lower target bandwidth. Hasegawa teaches allocating to said first channel a bandwidth higher than the lower target bandwidth (No Congestion Indication Step S12 results in Increase ACR Step S13 of Fig. 55, followed by Explicit Rate receiving ACR value Step S22 of Fig. 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate dynamic rate control system of Hasegawa to the system of max-min resources request of Cidon and Kumar for the purpose of providing a

transmission rate acceptable for the caller's terminal for each connection as suggested by Hasegawa (Abstract lines 12-14).

Claim 32, Cidon teaches a method of controlling a network communication rate (bandwidth reservation between a source node and a destination node ref. by Abstract lines 1-8), the method comprising receiving at a downstream intermediate node (Fig. 1, downstream intermediate node 2 ref. by col. 2 lines 50-67), a fixed value representing a desired rate of communication for a channel between a first network node and a second network node (Fig. 3C, bandwidth B_min which is fixed at value B_Θ/3 for communication between node 0 and node 3 ref. by col. 7 lines 6-21), and a modifiable value representing a target rate of communication allocated to the channel by an upstream intermediate node (Bandwidth Allocation Device receiving the bandwidth B_max value which is modified from a value of B_Θ to B_Θ/2 of Fig. 2B, Fig. 3A, Fig. 3D), if the downstream intermediate node does not have sufficient available bandwidth to conduct communications on the channel at a rate equal to said target rate (node 2 determination it cannot support a bandwidth of B_Θ but only B_Θ/2 ref. by col. 7 lines 22-39), adjusting said modifiable value such that the intermediate node can conduct communications on the channel at an adjusted rate represented by said adjusted modifiable value (Fig. 3D, insertion of the decreased bandwidth value of B_Θ/2 for B_max ref. by col. 7 lines 22-39). Cidon does not teach said desired rate is never less than said target rate.

Kumar teaches the desired rate is never less than said target rate (desired maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-31, wherein target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Cidon and Kumar do not teach at the downstream intermediate node allocating to the channel a rate of communication higher than the target rate of communication if the downstream intermediate node has sufficient available bandwidth.

Hasegawa teaches at the downstream node allocating to the channel a rate of communication higher than the r target rate of communication if the downstream intermediate node has sufficient available bandwidth (RM cell transmission through nodes 20 30 40 of Fig. 52, No Congestion Indication Step S12 results in Increase ACR Step S13 of Fig. 55, followed by Explicit Rate receiving ACR value Step S22 of Fig. 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate dynamic rate control system of Hasegawa to the system of max-min resources request of Cidon and Kumar for the purpose of providing a transmission rate acceptable for the caller's terminal for each connection as suggested by Hasegawa (Abstract lines 12-14).

Claim 35, Cidon teaches wherein if said modifiable value is adjusted to a first threshold value the first network node stops sending communications toward the second network node through the channel (Fig. 1, decrease of the bandwidth B_max to a threshold value of zero wherein Node 1 will deallocate the bandwidth reserved by a Bandwidth Allocation Device which ceases data transmission over ANR link 5 between Node 0 and Node 3 ref. by col. 3 lines 49-62).

Claim 36, Cidon teaches wherein if said modifiable value received at the downstream intermediate node is adjusted to a second threshold value (Fig. 1, bandwidth value B_min value received at Node 1 which is a threshold to which the B_max can be allocated before it is changed from the value of 0 to restart transmission ref. by col. 3 lines 49-62), the first network node sends communications toward the second network node through the channel a maximum rate (Fig. 1, where B_max equals B_min thus the transmission rate is set to the maximum rate through the intermediate Node 1 between Node 0 and Node 3 ref. by col. 2 lines 50-58).

Claim 37, Cidon teaches further comprising notifying the first network node of said adjusted modifiable value wherein the first network node then transmits communications toward the second network node through the channel at said adjusted rate (bandwidth reply packet back to the source Node 0 with a modified B_max as the maximum bandwidth transmission rate between Node 0 and Node 3 ref. by col. 5 lines 21-39).

Claim 41, Cidon teaches wherein the downstream intermediate node is a switch (Fig. 1, switching node between the source and the destination nodes ref. by col. 1 lines 35-42).

Claim 47, Cidon teaches wherein the downstream intermediate node is a computer (Fig. 1, use of computer communications for routing methods thus the nodes are computer based ref. by col. 9 lines 41-50).

Claim 49, Cidon teaches a method of controlling a network communication rate (bandwidth reservation between a source node and a destination node ref. by Abstract lines 1-8), the method comprising receiving at a downstream intermediate node (Fig. 1, downstream intermediate node 2 ref. by col. 2 lines 50-67), a fixed value representing a desired rate of communication for a channel between a first network node and a second network node (Fig. 3C, bandwidth B_min which is fixed at value B_Θ/3 for communication between node 0 and node 3 ref. by col. 7 lines 6-21), and a modifiable value representing a target rate of communication allocated to the channel by an upstream intermediate node (Bandwidth Allocation Device receiving the bandwidth B_max value which is modified from a value of B_Θ to B_Θ/2 of Fig. 2B, Fig. 3A, Fig. 3D), if the downstream intermediate node does not have sufficient available bandwidth to conduct communications on the channel at a rate equal to said target rate (node 2 determination it cannot support a bandwidth of B_Θ but only B_Θ/2 ref. by col. 7 lines 22-39), adjusting said modifiable value such that the intermediate node can conduct communications on the channel at an adjusted rate represented by said adjusted modifiable value (Fig. 3D, insertion of the decreased bandwidth value of B_Θ/2 for B_max ref. by col. 7 lines 22-39). Cidon does not teach a computer readable storage medium nor a desired rate is never less than said target rate.

Kumar teaches a computer readable storage medium storing instructions that when executed by a computer cause the computer to perform a method (Store 1120 and Processor 1110 of Fig. 11, storage device store the programs for carrying out the functions ref. by col. 11 lines 11-21), a desired rate is never less than said target rate (desired maximum bandwidth of Peak Cell Rate ref. by col. 2 lines 20-31, wherein target Explicit Rate of Fig. 3 is reduced to level the switch can support ref. by col. 2 lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the max-min fair rate control of Kumar to the system of resources request of Cidon for the purpose of determination of congestion feedback information based on per port congestion analysis as suggested by Kumar (col. 3 lines 15-19).

Cidon and Kumar do not teach at the downstream intermediate node allocating to the channel a rate of communication higher than the target rate of communication if the downstream intermediate node has sufficient available bandwidth.

Hasegawa teaches at the downstream node allocating to the channel a rate of communication higher than the r target rate of communication if the downstream intermediate node has sufficient available bandwidth (RM cell transmission through nodes 20 30 40 of Fig. 52, No Congestion Indication Step S12 results in Increase ACR Step S13 of Fig. 55, followed by Explicit Rate receiving ACR value Step S22 of Fig. 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate dynamic rate control system of Hasegawa to the system of

max-min resources request of Cidon and Kumar for the purpose of providing a transmission rate acceptable for the caller's terminal for each connection as suggested by Hasegawa (Abstract lines 12-14).

Claims 33, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon, Kumar and Hasegawa as applied to claim 32 above, and further in view of Gubbi (Patent No. US 6934752).

Claim 33, Cidon teaches a method of bandwidth reservation using bandwidth B_max values between link entities. Cidon, Kumar and Hasegawa do not teach each said value corresponds to a time between communications transmitted from the first network node to the second network node.

Gubbi teaches each said value corresponds to a time between communications transmitted from the first network node to the second network node (Fig. 32, Dynamic Bandwidth Request including a Latency Request 322 expressed in Time Unit microseconds ref. by col. 37 lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Dynamic Bandwidth Request message of Gubbi to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose of dynamically negotiating for the priority bandwidth and the retransmission parameters for each stream separately to optimize network capacity as suggested by Gubbi (col. 6 lines 7-11).

Claim 34, Cidon teaches decreasing a rate value (replacement of the B_max value by the lower B_maxn1 value in the bandwidth request packet ref. by col. 3 lines 38-48). Cidon, Kumar and Hasegawa do not teach said adjusting comprises increasing said time between communications.

Gubbi teaches adjusting rate value comprises increasing a time between communications (Fig. 32, Dynamic Bandwidth Request including a Latency Request 322 expressed in Time Unit microseconds which is the inverse of the BW Req 321 expressed in bytes/second such that a decrease adjustment in BW results in an increase in latency ref. by col. 37 lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Dynamic Bandwidth Request message of Gubbi to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose of dynamically negotiating for the priority bandwidth and the retransmission parameters for each stream separately to optimize network capacity as suggested by Gubbi (col. 6 lines 7-11).

Claims 40, 44, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon, Kumar and Hasegawa as applied to claim 32 above, and further in view of Gasbarro et al. (Pub No. US 2002/0071450 A1).

Claim 40, Cidon teaches a downstream intermediate packet switched node. Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is InfiniBand compliant.

Gasbarro teaches a node is InfiniBand compliant (Fig. 6, computer host system using InfiniBand architectures ref. by page 2 para. [0013]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth-optimizing host fabric adaptor of Gasbarro to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose of maximizing memory bandwidth access performance of a memory architecture while occupying minimal memory area as suggested by Gasbarro (page 1 para. [0006]).

Claim 44, Cidon teaches a downstream intermediate node. Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a bridge.

Gasbarro teaches a node is a bridge (Fig. 4A, I/O bridge 208 function of the Host node 130 ref. by page 4 para. [0039]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth-optimizing host fabric adaptor of Gasbarro to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose of maximizing memory bandwidth access performance of a memory architecture while occupying minimal memory area as suggested by Gasbarro (page 1 para. [0006]).

Claim 46, Cidon teaches a downstream intermediate node. Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a network adapter.

Gasbarro teaches a node is a network adapter (Fig. 5, Host Fabric Adapter 120A of the Host System 500 ref. by Abstract lines 1-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth-optimizing host fabric adaptor of Gasbarro to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose of maximizing memory bandwidth access performance of a memory architecture while occupying minimal memory area as suggested by Gasbarro (page 1 para. [0006]).

Claims 42, 43, 45, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cidon, Kumar and Hasegawa as applied to claim 32 above, and further in view of Heatwole et al. (Patent No. US 6937580).

Claim 42, Cidon teaches a downstream intermediate node for bandwidth reservation. Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a router.

Heatwole teaches an intermediate node is a router (Fig. 1, multi-port router ref. by col. 4 lines 50-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth capacity apportioning system of Heatwole to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose enhancing efficient utilization of system capacity as suggested by Heatwole (col. 2 lines 11-12).

Claim 43, Cidon teaches a downstream intermediate node for bandwidth reservation. Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a hub.

Heatwole teaches an intermediate node is a hub (Fig. 2, use of a hub 201 for communication with terminals ref. by col. 5 lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth capacity apportioning system of Heatwole to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose enhancing efficient utilization of system capacity as suggested by Heatwole (col. 2 lines 11-12).

Claim 45, Cidon teaches a downstream intermediate node for bandwidth reservation.

Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a repeater.

Heatwole teaches an intermediate node is a repeater (Fig. 2, use of a hub 201 for signal amplification of communications with terminals ref. by col. 5 lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth capacity apportioning system of Heatwole to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose enhancing efficient utilization of system capacity as suggested by Heatwole (col. 2 lines 11-12).

Claim 48, Cidon teaches a downstream intermediate node for bandwidth reservation.

Cidon, Kumar and Hasegawa do not teach the downstream intermediate node is a communication bus.

Heatwole teaches an intermediate node is a communication bus (Fig. 9, use of a Bus 903 within the computer system 901 ref. by col. 15 lines 57-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the bandwidth capacity apportioning system of Heatwole to the max-min bandwidth reservation method of Cidon, Kumar and Hasegawa for the purpose enhancing efficient utilization of system capacity as suggested by Heatwole (col. 2 lines 11-12).

Allowable Subject Matter

Claims 13-22, 26-30, 31 are allowed.

Response to Arguments

The applicant's arguments regarding independent claims 1, 12, 32, 49, 52 and 57 as to the interpretation of the limitation "the desired bandwidth is never less than said first target bandwidth" as taught by Roberts (Patent Pub. US 2002/0057651 A1) is accepted. The Roberts reference is withdrawn. A new prior art search reveals Kumar et al. (Patent No. 6597662) teaches the limitations in related art to that of Cidon et al. (Patent No. 5367517). A new round of rejection is hereby presented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John L. Shew whose telephone number is 571-272-3137. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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